Add to the end of Special Provisions Section 10-1.42 "Prestressing Concrete," the following subsection "S1 & S2 New Design: Presetressing":

S1 & S2 NEW DESIGN: PRESTRESSING

MATERIALS

Ducts

Embedded ducts and sheet metal duct transitions shall be galvanized.

The requirement for duct diameter to achieve an inside area at least 2.5 times the net area of the prestressing steel shall not apply.

CONSTRUCTION

Stressing

Post-tensioning forces shall not be applied until all concrete has attained the specified compressive strength as shown on the plans.

Plasma cutting of prestressing steel will be permitted where standard sawcut cannot be used.

In the event that more than 2 percent of the number of wires in a tendon breaks during the stressing operation, the Engineer shall determine on a case-by-case basis whether or not the tendon shall be removed and replaced.

Grouting

Water Soluble Oil

Prestressing steel installed but not grouted within 10 days shall receive a water soluble oil to protect tendons against corrosion.

Friction shall be reduced in the vertical tendons using water soluble oil as a lubricant.

The chemical composition of the water soluble oil shall not be deleterious to the steel or concrete. When oil is used, grout shall be pumped through the tendon until no contaminants (oil) are present in the outflow, at which point the grout may be contained within the tendon.

All ducts within a given vertical tendon layer will be grouted at one time (i.e. either Layer A or Layer B).

Add to the end of Special Provisions Section 10-1.45 "Concrete Structures," the following subsection "S1 & S2 New Design: Concrete":

S1 & S2 NEW DESIGN CONCRETE

SOFFIT BEAM AND JACKET WALL

Creep Testing

Creep testing shall be conducted on concrete used for the soffit beam and jacket wall at the E2 Shear Key anchorage in accordance with the requirements in ASTM Designation C 512 and these special provisions. Test results shall be submitted to the Engineer in writing within 10 days of test completion.

Test cylinders shall be loaded at 28 days to a stress of 20% to 40% of the 56 day design compressive strength shown on the plans. Creep tests shall continue until the test specimens have been loaded for 120 days. In addition to the measurements required by ASTM Designation: C 512, strain readings shall be taken at 30, 60, 90, and 120 days under load.

Self-Consolidating Concrete

Self-consolidating concrete as specified herein may be used for soffit beam and jacket wall at the E2 Shear Key anchorage. The Contractor's proposed self-consolidating concrete mix design submittals shall include test results for slump flow, slump flow time to a 500 mm diameter, stability of the concrete mixture, column segregation test and compressive strengths at 7, 14, and 28 days.

Thermal Control Plan

The Contractor shall submit a Thermal Control Plan to the Engineer for approval. The Thermal Control Plan shall be based on the design assumption that cracking of the concrete as a result of heat of hydration shall not occur.

Analysis shall be performed to determine the maximum allowable temperature differentials between the hottest point of the concrete and the exterior faces.

Add to the end of Special Provisions Section 10-1.59 "Steel Structures," the following subsection "S1 & S2 New Design: Saddle":

S1 & S2 NEW DESIGN: SADDLE

MATERIALS

Material designated for the saddle tray plates on the plans shall conform to the following:

A. The steel shall conform to the requirements of ASTM Designation: A 709M Grade 345 for tension members in Zone 2 with Supplementary Requirements S8 "Ultrasonic Examination," S60 "Frequency of Tension Tests," Tension tests shall be taken from each end of each as-rolled or as-heat treated plate, and S93, "Limitations on Weld Repair," as modified herein.

Where Supplementary Requirement S8 is specified above, each plate shall be ultrasonically examined and shall meet the acceptance criteria in ASTM Designation: A578, Level C. Scanning shall be continuous over 100% of the plate surface per Supplementary Requirement S1. The sketch of reportable indications required by ASTM designation A578 shall be submitted to the Engineer with the mill test report.

Tensile and toughness tests shall be performed on a per-plate basis.

The mill test reports and sketches of reportable ultrasonic indications for each plate shall be submitted to the Engineer for acceptance and assignment to specific component pieces.

Steel plates designated as Grade 345 in thicknesses exceeding 100 mm shall conform to ASTM Designation A572M (modified), Grade 345, with Supplementary Requirements: S5 Charpy V-Notch Impact Test (34 J at -12 degrees C with longitudinal specimen orientation and "H" heat frequency of testing); S28 Fine Grain Practice; S31 Maximum Carbon Equivalent for Weldability (0.50); and S90 Type (Type 1, 2 or 3 only).

B. CVN test for the weld metal shall meet the requirements of AWS D1.5, Table 12.1. The AWS D1.5, Clause 12.7.4 limit of 36 months shall not apply.

Steel designated for other saddle components shall conform to ASTM Designation: A 709M Grade 345.

CHECK TESTING

Structural steel shall conform to the designated ASTM Standard and the check testing requirements of this section.

Check samples shall be furnished for the following:

Each heat of maximum thickness of members designated as saddle tray plate, as shown on the plans.

Steel plates, shapes, or bars containing check samples shall be furnished from the mill with extra length in order to provide for removal of material for check samples at the point of fabrication. Check samples may be cut from either end of the designated plate, shape, or bar.

At the option of the Contractor, check samples may be removed at the rolling mill rather than at the point of fabrication. The sample will be removed from the mill plate that will be stripped by the fabricator to produce the designated plate and may be taken from any location within that plate. The mill plate from which samples are removed shall be marked with the same identifying numbers as are used on the samples.

Material for check samples shall be removed by the Contractor in the presence of the Engineer. Check samples for plates wider than 610 mm shall be 355 mm wide and 460 mm long with the long dimension transverse to the direction of rolling. Check samples for all other products shall be 460 mm long, taken in the direction of rolling, and the width shall be the product width. Check samples shall be removed and delivered to the Engineer before the material is fabricated into components. The direction of rolling, heat numbers, and plate numbers shall be marked on the samples with paint or other indelible marking material or may be steel stamped in one corner of the plate. Certified Material Test Reports complying with the requirements in these special provisions shall accompany the check sample.

Check samples shall be delivered to the Transportation Laboratory at the Contractor's expense. The check samples will be tested by the Transportation Laboratory for compliance with the requirements specified in ASTM and these special provisions. Check sample test results will be reported to the Contractor within 3 weeks of delivery to the Transportation Laboratory. In the event several samples are submitted on the same day, an additional day will be added for every 2 samples submitted. The test report will be made for the group of samples.

The results of the tensile and impact tests shall not vary more than 5 percent below the specified minimum or 5 percent above any specified maximum requirements. If the initial check test results vary more than 5 percent but not more than 10 percent from the specified requirements, a retest may be performed on another sample from the same heat and thickness. The results of the retest shall not vary more than 5 percent from the original specified requirements. If the results of check tests exceed these permissible variations, material planned for use from the heat represented by said check samples shall be subject to rejection.

FABRICATION

Fabrication of the steel saddle assemblies shall be performed by a fabricator with AISC Major Bridge or Intermediate Bridge certification.

The locations of individual plates shall be as determined by the fabricator and approved by the Engineer.

Fabrication and welding shall conform to the requirements of AWS D1.5-2002 and these special provisions.

Full traceability between the certified material test report and the final location in the structure shall be maintained for all saddle tray steel.

GMAW with solid wire shall not be permitted.

SMAW electrodes shall conform to the requirements of AWS filler metal specifications with supplemental diffusible hydrogen designator H4.

All FCAW and GMAW (metal cored) electrodes shall conform to the diffusible hydrogen requirements of the AWS filler metal specifications optional supplemental designator H4 or H8.

Universal mill plates shall have a minimum of 5 mm of material removed from edges and ends by thermal cutting prior to assembly and welding.

All welds not shown as permanent welds on the plans or approved by the Engineer shall be removed and the area inspected by MT.

All critical weld repairs, as defined in AWS D1.5, Clause 12.17.3, shall be approved by the Engineer prior to beginning the repair and shall be documented giving details of the type of discontinuity and extent of repair.

Nondestructive examination shall be as follows:

1. All machined surfaces shall be examined 100% by MT or PT after all machining and forming is complete. Linear indications exceeding 1.5 mm shall be repaired. Linear indications are defined as having a ratio between the greatest and least dimensions that is greater than 3. Non-linear indications that are greater than 3 mm but not greater than 6 mm shall be filled with an approved epoxy filler. Larger flaws shall be weld repaired using a procedure approved by the Engineer.

2. Magnetic particle testing of welds shall not be performed for acceptance before 48 hours after the weld has cooled to ambient temperature.

3. All welds shall be tested 100% by MT examination. In addition, the root pass of PJP welds shall be 100% tested by VT and MT. The 48 hour wait period after the weld has cooled shall not apply to the root pass of PJP welds. MT of the root may be completed if the temperature is below 550 degrees Fahrenheit.

4. All (Complete Joint Penetration) CJP welds shall be tested 100% by ultrasonic testing.

5. Fillet welds shall receive 100% VT and MT of the completed weld.

COATING

Surfaces of the existing shear key, new wedge plates, bottom of new shim plates, and the exposed bottom of the new support plates shall be dry blast cleaned in accordance with the provisions of SSPC: Surface Preparation No. 10 "Near White Blast Cleaning," and coated to achieve a Class B surface. The interface between new shim plates, support plates, and new tray plates shall be shop prepared to achieve an equivalent Class B surface.

The insides of all saddle tray plates and stem wall keys shall be uncoated. The inside of all saddle assemblies shall be protected from the environment between the completion of fabrication and tendon installation.

All exposed structural steel and components shall be coated with the project specified epoxy coating system (SP10-1.69).

TESTING PROCEDURES

The following Shop Saddle Testing Procedure and Field Pressure Testing Procedure is predicated upon the following assumptions:

The upper saddle will be clamped vertically to resist 100 tons.
All ducts within a given vertical tendon layer will be grouted at one time (i.e. either Layer A or Layer B.

1. Shop Saddle Testing Procedure

The saddle assemblies shall be clamped flat such that all intermediate surfaces are in contact with each other prior to performing the shop welds along the sides of the saddle assemblies.
A thin bead of silicone shall be applied around each of the vent troughs prior to clamping.
All shop welds shall be MT'd, after unclamping the saddle assemblies and prior to acceptance.

2. Field Pressure Test Procedure

The field pressure test shall be performed immediately after installing the saddles (lower saddle-upper saddle-lower saddle).
Saddle trays shall be pressure tested by layer using a visible medium to identify any leaks between Layer A and Layer B and/or at the field splices between the upper and lower saddles.
Saddles shall be inspected for leakage during the test and any leaks shall be repaired. After making any necessary repairs, the test shall be performed again.

3. All welds shall be tested 100% by MT examination. In addition, the root pass of PJP welds shall be 100% tested by VT and MT. The 48 hour wait period after the weld has cooled shall not apply to the root pass of PJP welds. MT of the root may be completed if the temperature is below 550 degrees Fahrenheit.

4. All (Complete Joint Penetration) CJP welds shall be tested 100% by ultrasonic testing.

5. Fillet welds shall receive 100% VT and MT of the completed weld.

COATING

Surfaces of the existing shear key, new wedge plates, bottom of new shim plates, and the exposed bottom of the new support plates shall be dry blast cleaned in accordance with the provisions of SSPC: Surface Preparation No. 10 "Near White Blast Cleaning," and coated to achieve a Class B surface. The interface between new shim plates, support plates, and new tray plates shall be shop prepared to achieve an equivalent Class B surface.

The insides of all saddle tray plates and stem wall keys shall be uncoated. The inside of all saddle assemblies shall be protected from the environment between the completion of fabrication and tendon installation.

All exposed structural steel and components shall be coated with the project specified epoxy coating system (SP10-1.69).

TESTING PROCEDURES

The following Shop Saddle Testing Procedure and Field Pressure Testing Procedure is predicated upon the following assumptions:

The upper saddle will be clamped vertically to resist 100 tons.
All ducts within a given vertical tendon layer will be grouted at one time (i.e. either Layer A or Layer B.

1. Shop Saddle Testing Procedure

The saddle assemblies shall be clamped flat such that all intermediate surfaces are in contact with each other prior to performing the shop welds along the sides of the saddle assemblies.
A thin bead of silicone shall be applied around each of the vent troughs prior to clamping.
All shop welds shall be MT'd, after unclamping the saddle assemblies and prior to acceptance.

2. Field Pressure Test Procedure

The field pressure test shall be performed immediately after installing the saddles (lower saddle-upper saddle-lower saddle).
Saddle trays shall be pressure tested by layer using a visible medium to identify any leaks between Layer A and Layer B and/or at the field splices between the upper and lower saddles.
Saddles shall be inspected for leakage during the test and any leaks shall be repaired. After making any necessary repairs, the test shall be performed again.